

**Bonneville Power Administration
Fish and Wildlife Program FY98 Watershed Proposal Form**

Section 1. General administrative information

Title **Yakima Basin Environmental Education**

Bonneville project number, if an ongoing project 9405900

Business name of agency, institution or organization requesting funding
Educational Service District 105

Business acronym (if appropriate) ESD 105

Proposal contact person or principal investigator:

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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name
EcoNorthwest	270 Westrudge	Selah, WA	Bob Tuck

NPPC Program Measure Number(s) which this project addresses.
7.6B.6

NMFS Biological Opinion Number(s) which this project addresses.

Other planning document references.

Subbasin.
Yakima

Short description.

Provides training for teachers and students which allows them the opportunity to participate in the maintainance and restoration of their local watershed. through integrated, hands-on curriculum that meets the essential learnings mandated by the state.

Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
<u>S</u>	Anadromous fish	<u> </u>	Construction	<u> </u>	Watershed
<u> </u>	Resident fish	<u> </u>	O & M	<u> </u>	Biodiversity/genetics
<u> </u>	Wildlife	<u> </u>	Production	<u> </u>	Population dynamics
<u> </u>	Oceans/estuaries	<u> </u>	Research	<u>X</u>	Ecosystems
<u> </u>	Climate	<u> </u>	Monitoring/eval.	<u> </u>	Flow/survival
<u>X</u>	Other	<u> </u>	Resource mgmt	<u> </u>	Fish disease
		<u> </u>	Planning/admin.	<u> </u>	Supplementation
		<u> </u>	Enforcement	<u>*</u>	Wildlife habitat en-
		<u> </u>	Acquisitions		hancement/restoration

Other keywords.

Education, teacher training, salmon life cycle, raising salmon in the classroom, water quality monitoring, riparian restoration, stream inventories, community service projects,

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules***Objectives and tasks***

Obj 1,2,3	Objective	Task a,b,c	Task
1	To provide relevant, hands-on curriculum to all participating teachers and their students	a	develop communications links with local research projects that have the potential for student involvement
		b	involve students in community problem solving relatedto local environmental issues, and arrange

			for area scientists to participate in teacher training sessions and student presentations
2	Provide teachers and students with necessary equipment and materials to participate in local environmental education activities	a	identify, purchase, and maintain equipment related to field trip topics
		b	organize a check-out system for the equipment
3	Continue to support teachers and students who have participated in the program of the years	a	provide updated information and access to newly acquired resources
		b	provide resources for ongoing student projects
4	Foster community partnerships to improve both education and the environment	a	involve various community agencies and organizations in active participation in classroom activities
		b	involve students in presenting possible solutions to problems they have identified to appropriate agencies or organizations
5	Stimulate student interest in science and the environment as possible career choices	a	arrange for local biologists and other scientists to participate in field trip trainings and classroom presentations
		b	offer opportunities for student involvement in various area research projects
6	Protect and rehabilitate local habitat	a	arrange partnerships with local agencies and organizations to involve students in relevant projects
		b	provide a curriculum with appropriate information aimed at creating positive attitudes about the environment among future decision makers

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	8/1998	7/1999	69.00%

2	8/1998	7/1999	6.00%
3	8/1998	7/1999	5.00%
4	8/1998	7/1999	5.00%
5	8/1998	7/1999	5.00%
6	8/1998	7/1999	10.00%
			TOTAL 100.00%

Schedule constraints.

no

Completion date.

2010

Section 5. Budget

FY99 budget by line item

Item	Note	FY98
Personnel	175 days @\$234.20/day	\$40,985
Fringe benefits		\$13,484
Supplies, materials, non-expendable property	supplies and instructional materials	\$2,000
Operations & maintenance	ESD office costs	\$7,300
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		
PIT tags	# of tags:	
Travel	Teacher field trip transportation@\$450/tripX 4=1800 personnel travel @\$1000	\$2,800
Indirect costs	9.00%	9,134
Subcontracts	EcoNorthwestr	\$15,000
Other	50 substitutes @ \$110/subx4	\$22,000
TOTAL		\$112,703

Outyear costs

Outyear costs	FY99	FY00	FY01	FY02
Total budget	\$119,000	\$123,000	\$126,000	\$130,000
O&M as % of total				

Section 6. Abstract

The Environmental Education Training Program offers teachers throughout the Yakima valley the opportunity to become involved with their students in real life projects to protect, enhance, analyze and provide solutions to water resource problems in their community. This ongoing program is in its fifth year of operation. In excess of 150 teachers throughout the region have been involved and annually over 1500 students are actively involved in hands-on activities related to understanding the on-going stewardship of our watershed. Activities range from math and science investigations to language arts, journal writing, historical investigations of the watershed, civics, economics, and responsible citizenship through knowledge of water issues like water quality monitoring, salmon life cycle needs, stream hydrology, riparian habitat functions, wetlands, etc.

Students have developed community partnerships to monitor water quality, restore riparian corridors, raise salmon in their classroom for release into various tributaries, monitor storm run-off, collect data annually on salmon redds in the upper Yakima River. Each year additional teachers will be trained adding additional schools and students to the evergrowing number of involved participants. An independent evaluation of the program was conducted this year and will be an on-going part of the program documenting program outcomes, teacher reaction, and community involvement as well as the long term impact of the program on teaching.

Section 7. Project description

a. Technical and/or scientific background.

Water conservation and the maintenance of high water quality are priority issues in the Yakima River watershed. The increasing concern for potential salmon recovery is also of high interest to many in the Yakima Valley. Approximately 80% of the mainstream Yakima River flows are diverted and re-diverted for agricultural irrigation. Return flows are seriously polluted and, as a result, the lower Yakima River exceeds permissible state standards for DDT, ammonia and other nutrients, temperature and turbidity. Because of these conditions, the Yakima River has been listed as “impaired” under the Federal Clean Water Act. Once abundant salmon and steelhead populations have dwindled to precariously low levels and other beneficial uses of Yakima River waters are in jeopardy. In addition to agriculture, grazing, logging, mining and urban development have contributed to water problems in the Yakima River Basin.

This created a local social and political climate with a high potential for controversy. This also created a great need for education about the importance of water conservation, water quality, and caring for our watershed ecosystem.

In the area of education reform the Washington Office of the Superintendent of Public Instruction has issued a mandate requiring that all Washington schools teach environmental education K-12 in an integrated curriculum. A great deal of research points to the success of an interactive curriculum whereby students are actively engaged in problem identification, investigation, data collection and analysis, and synthesis.

Environmental understanding, not just environmental awareness, is an important component of an educated and literate individual and therefore, environmental education has a very important role to play. It provides great opportunities for interdisciplinary work that allows students to link together hands-on science investigations with real world solutions to local issues and problems.

This program plays a significant role in teacher training. Science education reform requires that teachers need to teach in different ways. This program allows teachers the opportunity to create innovative curriculum that leads students toward an understanding of important local themes and concepts related to our watershed. With genuine understanding of the natural world comes an appreciation and concern that will hopefully lead to sustainable actions, attitudes, and values.

This program has provided the opportunity for over 1500 students each year to observe spawning salmon on the upper Yakima River. Several long term school projects have developed with the help of partnerships with the North Yakima Conservation District, Washington State Dept. of Fish & Wildlife, and the city of Yakima Parks Department resulting in the construction of two nature trails along local streams.

Several schools raise salmon in their classrooms for release into three local streams. This activity over the past four years resulted in confirmed returns of adult coho into Wide Hollow Creek this past year. Other successful program activities include water quality monitoring by several schools along the Yakima River, monitoring of suspended solids in local drains, and K-12 curriculum activities related to salmon life cycle needs.

b. Proposal objectives.

The Environmental Education Training Program is defined by six goals, which are both particular and global and which focus both on the program itself and the community in which the students live. Its goals and representative implementing activities, are--

1. To provide relevant, hands on curriculum to all participating teachers and their students by

a) developing communication links with local research projects that have the potential for student involvement,

b) involving students in community problem solving related to local environmental issues, and arranging for area scientists to participate in teacher training sessions and student presentations.

2. To provide teachers and students with necessary equipment, by

a) identifying, purchasing and maintaining equipment related to field trip topics, and

b) organizing a check-out system for the equipment

3. To continue supporting teachers and students who have participated in the program during the last five years by

a) providing updated information and access to newly acquired resources,

b) provide resources for ongoing student projects

4. To foster community partnerships to improve both education and the environment, by

a) involving various community agencies and organizations in active participation in classroom activities, and

b) involving students in presenting possible solutions to problems they have identified to appropriate agencies or organizations

5. To stimulate student interest in science and the environment as possible career choices by

a) arranging for local biologists and other scientists to participate in field trip trainings and classroom presentations, and

b) offering opportunities for student involvement in various area research projects

6. To protect and rehabilitate local habitat by

a) arranging partnerships with local agencies and organizations to involve students in relevant projects, and

b) provide a curriculum with appropriate information aimed at creating positive attitudes about the environment among future decision makers.

c. Rationale and significance to Regional Programs.

The Environmental Education Program specifically addresses Section &.6B.6 of the Fish and Wildlife Program by:

providing educational training, materials, and support for teachers

providing relevant, hands-on field-oriented environmental education opportunities for students, focusing on water, salmon life cycle, and watershed management

forming partnerships with teachers and students with scientific and technical professionals across a broad spectrum of resource activities and interests involved in watershed and resource management

providing opportunities for real world project involvement by students, including water quality, riparian restoration, salmon life cycle, and related items

providing the opportunity for students to share the results of the field work and observations with other students both in and outside the Yakima Basin through such means as science fairs and the world wide web.

The Environmental Education Program supports the entire concept of salmon recovery through watershed restoration embodied in Section 7 of the Fish and Wildlife Program. The Program provides teachers and students a grounding in integrated resource management, the importance of water to all phases of human existence, the need to consider various human communities when addressing water and related resources, the manner in which all resources are connected, and the need for an open and inclusive process when making resource management decisions.

Through this Program, students obtain a broad understanding of the complexities with respect to natural resource management and are better equipped to make informed decisions when addressing resource issues as adults. By involving professional scientists and resource managers from a broad spectrum of agencies and user groups, teachers and students not only gain knowledge and insights into resource management and access to resource professionals, but students are exposed to potential career opportunities in natural resource management.

There are a number of education programs offered by various resource agencies in the Columbia Basin, but this is the only program that provides hands-on training for participating teachers, continuing support for participating teachers after they have completed the program and provides substitute teachers for the teachers on training days. Materials from other resource training and education efforts are utilized when appropriate.

The scope and extent of student projects and work products produced as a result of this program are only limited by the imagination of the teachers and students. Teachers have integrated natural resources and related issues into math and science lessons, English papers, history term papers, and art projects such as murals and paper maché.

d. Project history

The Yakima Basin Environmental Education Program (9405900) has received \$99,992 in 1997, \$97,681 in 1996, \$94,701 in 1995, \$94,701 in 1994.

The success of the program is indicated in the attached independent evaluation. To date the program has trained 150 teachers that continue to sustain curriculum and activities. Over 1500 students each year are actively involved in related projects, field trips, and classroom activities related to our local watershed restoration.

e. Methods.

Objective 1: To provide relevant, hands-on curriculum to all participating teachers and their students

In each two year program cycle, teachers take part in eight field trip training experiences covering such topics as understanding water needs and uses, stream hydrology, the value of wetlands, riparian habitat functions, monitoring and maintaining water quality, and salmon life-cycle and spawning requirements. The training allows teachers to become confident in and competent about these issues.

Teachers, after each training session, are given relevant materials and equipment. They are then able to replicate their experiences with their students. Students are involved in hands on activities about crucial environmental issues in an interdisciplinary context.

Objective 2: Provide teachers and student with necessary equipment and materials to participate in local environmental education activities

This program provides teachers with necessary equipment required to do project work in the field with their students including water quality testing kits, waders, kick nets, measuring tapes, emhoff cones, etc. These items are maintained and available on a check-out basis through the Educational Service District 105 (ESD 105)

Additional items for classroom demonstration and instruction are also provided. These include groundwater models, watershed demonstration models, curriculum guides, maps, posters, and field study guides acquired through the program budget and provided for teachers on request.

Objective 3: To continue to support teachers and students who have participated in the program during previous training cycles

Each fall all present participating teachers and students as well as all past participating students are encouraged to visit the spawning salmon in the upper Yakima River by arranging a scheduled guided field trip with expert biologists on hand at the site to provide information and instruction. In this way over 1500 students observe spawning salmon each year.

Additionally, every teacher who has participated in the training program can arrange for classroom speakers or specific classroom presentations provided by this program with the cooperation of the several partnerships involved throughout the program training.

Objective 4: To foster community partnerships to improve both education and the environment.

Through the school year teachers and students are advised of various opportunities to become actively involved with specific projects funded by various local, state, federal and tribal programs. These community agencies and environmental organizations allow input and participation of various classrooms on riparian restoration, water quality monitoring, nature mapping and inventory, etc.

Through suggested classroom activities in the training program, teachers are encouraged to involve their students in student identified projects related to the local watershed. Students identify a problem, test their hypothesis, and then present their findings to the appropriate agency or organization. (Example: Selah Middle School students presented their water quality monitoring data to City of Selah Treatment Plant.)

Objective 5: To stimulate student interest in science and the environment as possible career choices

This program provides many opportunities for students to observe local scientists, biologists and technicians in the field. Partnerships with local agencies have allowed

students to participate in field work in water quality monitoring, soil sampling, wetland management, fisheries, forestry, and wildlife.

Objective 6: To protect and rehabilitate local habitat

The program actively provides teachers with classroom activities and curriculum with appropriate information aimed at creating positive attitudes about the local environment among future decision makers.

This program arranges partnerships with local agencies and organizations to involve students in relevant projects that improve and protect the habitat. Some of these have included the development and maintenance of a nature trail along Wide Hollow Creek, monitoring water quality and clean up of the creek in Randall Park, monitoring salmon redds in the upper Cle Elum, monitoring wetland in Sportsman Park.

f. Facilities and equipment.

Facilities for the operation of the Environmental Education Training Program include office space at the Educational Service District office including the following:

- space
- support staff
- computer services and networking
- copying
- phone

Equipment for the operation of the Environmental Education Training Program includes:

- charter bus for each of the teacher training field trips (4 trips/year)
- replacement chemicals and equipment for water quality test kits
- replacement waders, kick nets, buckets, measuring tapes, etc
- field study guides, curriculum packets, posters, etc.

g. References.

Section 8. Relationships to other projects

It is the goal of the Environmental Education Training Program to involve the teachers and students in active research projects sponsored by local, state, federal and tribal programs, as well cultivate community service project relationships with a number of local businesses and environmental organizations. Twelve organizations actually took part in conducting training activities for teachers and making field trip and classroom

presentations. They were: Boise Cascade, Bureau of Reclamation, City of Yakima, Nature Conservancy, North Yakima Conservation District, Pacific Power & Light, Tree Top, Washington State Fish and Wildlife Department, Wahsington State Parks, Yakama Indian Nation Fisheries Department, Yakama Indian Nation Wildlife Department.

These organizations made substantial contributions, in both time and resources, to the Program. Each saw the program as valuable to the students, to the community, and to their agency. Some of the reasons they gave for taking part in the program were that it promotes understanding of environmental issues and allowed them to network with the schools giving the organization a way of reaching future decision makers in an ongoing and positive way. Carrying on educational activities in cooperation with the schools results in positive public exposure for the organization and provides educational opportunities for students enabling the agency and its employees to fulfill an important civic responsibility.

Section 9. Key personnel

Section 10. Information/technology transfer